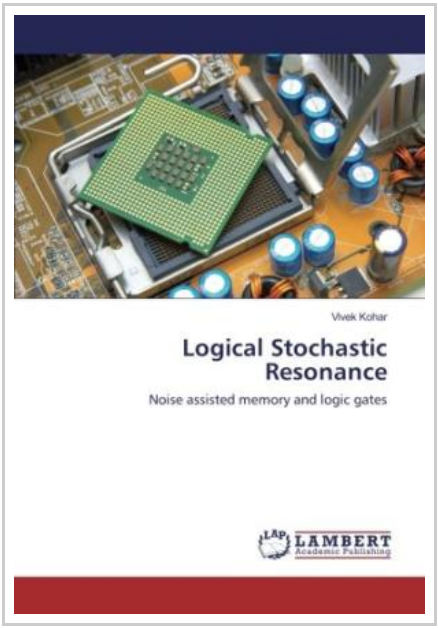

Logical Stochastic Resonance

By Kohar, Vivek

Condition: New. Publisher/Verlag: LAP Lambert Academic Publishing | Noise assisted memory and logic gates | The shrinking of dielectric layers in electronic devices to within an order of atomic size and the impending failure of Moore's law has compelled us to explore alternative strategies to realize logical functionality. In this book, we explore the application of nonlinear dynamical systems in the design of computing devices. The possibility of utilizing the phenomenon of stochastic resonance in bistable or multi-stable nonlinear dynamical systems to implement memory and logic function has been studied. We demonstrate how ubiquitous ambient noise enables a bistable system to behave as a memory device, as well as a logic gate for sub-threshold input signals. In some optimal range of noise, the system can operate flexibly, both as a AND/OR gate and a Set-Reset latch, on variation of an asymmetrizing bias. When noise levels are low, a periodic signal can enable same functionality. The ideas have also been demonstrated in vertical cavity surface emitting lasers. | Format: Paperback | Language/Sprache: english | 80 pp.

Reviews

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